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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

In cooperation with State, Federal, and Other Agencies

COTTON INSECT CONDITIONS FOR WEEK ENDING AUGUST 5, 1949
(Eighth Cotton Insect Survey Report for 1949)

The boll weevil is now generally more abundant in the 12 States where it occurs than it has been for many years. Professor Dwight Isely of the University of Arkansas wrote on August 2: "We are having a real weevil year. Undoubtedly heavy infestations of weevils are more widely distributed than they were in 1923 and I can think of nothing else to compare with it."

On August 8 Dr. Clay Lyle, State College, Mississippi, wrote: "This has certainly been the most disastrous season from an insect standpoint we have had since I became head of the Department in 1931."

Dr. F. S. Arant, Auburn, Alabama, wrote on August 5: "The boll weevil infestation in most parts of Alabama has been heavier this year than any time since I have been connected with entomological work."

The weevils are now abundant and causing serious damage in thousands of acres of cotton in Tennessee, northern Arkansas, and western North Carolina where they usually cause little or no damage. There is a possibility that the weevils will reach Missouri, Kentucky, and Illinois during September.

Many thousands of bales of cotton can be saved from the boll weevil by the proper use of insecticides during the remainder of August and early September. The insecticides widely recommended for boll weevil control are calcium arsenate, benzene hexachloride and toxaphene. The proper use of any of these will save cotton from weevil damage.

It appears that the boll weevil is causing greatest damage in Mississippi, with extremely serious damage in Alabama, Georgia, South Carolina, Arkansas, and Louisiana. It is causing more damage in Tennessee and North Carolina than during any recent year. Weevil conditions are also serious in parts of Oklahoma and Texas.

INSECTICIDES

ALABAMA: W. A. Ruffin, Extension Entomologist, Auburn, wrote on August 3: "Cotton farmers in Alabama are continuing their fight to save at least part of this cotton crop. All ground equipment and airplane equipment so far as I know is busy. Farmers are still buying insecticides. My impression is that thousands of acres of cotton will be dusted, in so far as supplies of insecticides will permit, throughout the month of August. In the past most of our farmers have quit dusting their crop by early August."

GEORGIA: Some areas report shortage of cyanamid for cotton defoliation.

MISSISSIPPI: Clay Lyle, State College, issued a release on August 8 in regard to boll weevil control that was in part as follows: "Dusting at 4-day intervals with toxaphene, or with 3-5 or 3-5-40 alternated with calcium arsenate, is suggested where these are available. Where a limited supply of BHC dust is available, dusting with straight calcium arsenate is suggested, holding the BHC in reserve for outbreaks of lice which sometimes, but not always, follow calcium arsenate applications. Liquid applications should contain not less than 2 pounds toxaphene per acre. A newer chemical, 118, has given good results in sprays and dusts at not less than one-quarter

pound per acre, but the supply is very limited. Calcium arsenate alone is suggested where the desired combinations of organic materials are not available. We know of no better control for weevils during migration."

OKLAHOMA: C. F. Stiles, Extension Entomologist, telegraphed on August 10: "Supply organic insecticides exhausted Durant, Bryan County; Tishomingo, Johnston County; Oklahoma City, Oklahoma County. 8,000 pounds needed at Tishomingo now to control weevils and worms on late cotton."

SOUTH CAROLINA: The insecticide supply is very short in the Piedmont area. Poisoning in the central and coastal plains area is about over.

TEXAS: A release issued by the Extension Service of the Texas A. & M. College on July 28 was as follows: "Texas cotton farmers may have trouble finding a source of supply of the newer and recommended cotton insecticides. Applications have been very heavy and a shortage has already developed in some states.

"Grasshopper, cutworm, and armyworm infestations were heavier than usual in many areas of the southwest and now the bollworm is more numerous and widespread throughout the cotton belt than any year since 1941, except in Texas. Johnston credits the early and thorough cotton stalk plow-up program in Texas with holding down to some extent the boll weevil damage.

"Bollworms are causing serious damage in some sections of the state and if present conditions prevail, damage can be expected to become general in many areas within the next two weeks, he says.

"The preferred material for general cotton insect control, continues Johnston, is 20 percent toxaphene plus 40 percent sulfur, or a mixture of 3 percent gamma BHC, 5 percent DDT, 40 percent sulfur (3-5-40). If these materials are not available, some substitutions can be made if the substitutes can be found, and results should be good.

"Where the boll weevil is the major pest, 7 to 10 pounds of calcium arsenate per acre at 5-day intervals will give good control, says Johnston. Alternate applications of 3-5-40 and calcium arsenate will prevent increased aphid populations which may result from using calcium arsenate alone. A special lime-free calcium arsenate plus 1 percent gamma BHC will also give good boll weevil control and prevent possible aphid increase.

"For the bollworm alone, the following insecticides are suggested in the order of their preference: 2 percent gamma BHC, 10 percent DDT, 40 percent sulfur; 10 percent DDT, 40 percent sulfur; 5 percent DDT, 75 percent sulfur at increased dosage; lead arsenate; cryolite; and calcium arsenate. Any one of these materials, he adds, should be applied every five days at rates of 12 to 15 pounds per acre. Aphid infestations may increase following the use of either the arsenates or DDT. Alternate applications of these and 3-5-40 as for boll weevil control will prevent possible aphid increases.

"When both insects are abundant follow the suggestions for controlling the boll weevil alone at increased dosage of 12 to 15 pounds per acre, says Johnston. Two percent gamma BHC plus 10 percent DDT and 40 percent sulfur at the rate of 12 to 15 pounds per acre may also be used.

"Fleahopper and Lygus may be controlled with 5 percent DDT, 75 percent sulfur or 10 percent toxaphene, 40 percent sulfur. For the fleahopper alone sulfur dust, two applications at 15 to 18 pounds per acre will give good control."

K. P. Ewing, Waco, wrote on August 8 on the availability of insecticides in Texas as follows: "There is a serious shortage of insecticides in nearly all counties in the Blackland and Upper Coastal areas of Texas. Even before chlordane was recommended as a substitute farmers were having to buy this insecticide because it was impossible to obtain toxaphene and the 3-5-40 mixture. Ten percent DDT-sulfur can be bought and some growers are using this material because they cannot get toxaphene or 3-5-40. In most fields, however, the boll weevil is of such importance that DDT alone should not be used. Most companies in Texas are completely out of toxaphene and 3-5-40 and are turning down huge orders every day. If a serious bollworm infestation should develop in the North and South Plains areas of Texas (over 3 million acres of cotton) it now appears that it would be impossible to meet such an extreme emergency with supplies of insecticides now on hand."

Excerpts from WEEKLY COTTON WEATHER BULLETIN issued by the Weather Bureau, U. S. Department of Commerce, New Orleans, Louisiana, August 2.

ALABAMA: Conditions favorable for checking weevils.

ARIZONA: Near normal temperatures aiding COTTON growth, considerable shedding reported as result excessive heat during mid-July; bollworm damage some fields where dusting too long delayed; prospects as whole very good for COTTON.

ARKANSAS: COTTON progress good, condition good northeast quarter; fairly good southern half where rank, sappy, did not fruit well.

CALIFORNIA: San Joaquin COTTON doing very well, good setting of bolls, some very large; irrigation continuing normally; Palo Verde Valley COTTON fruiting well, bolls continue growth under favorable weather.

GEORGIA: COTTON condition fair to fairly good, opening south.

LOUISIANA: Somewhat drier, more sunshiny weather favorable for all crops, especially cotton, but more sunshine needed to check too rapid growth, permit effective poisoning for weevils; COTTON condition generally good.

MISSISSIPPI: COTTON condition generally good but some rank and sappy plants reported where rainfall has been excessive; weevil infestation continues heavy.

MISSOURI: COTTON progress good.

NEW MEXICO: COTTON and other ROW crops making good advance.

NORTH CAROLINA: Hot and dry; temperatures 7-8 degrees above normal; only light scattered showers mostly toward end of week; favorable for control of boll weevils; not too favorable plant growth.

OKLAHOMA: Progress COTTON normal, condition mostly good southeast, fair to good southwest.

SOUTH CAROLINA: COTTON condition progress generally good, bolls beginning open south and east, favorable for checking weevils.

TENNESSEE: COTTON made good progress but weather favorable for weevils.

TEXAS: COTTON condition very good, insect control measures handicapped by showery weather; weevils increased north-central and east, bollworms threatening south and southeast; western half free from insects; excellent progress all areas; picking 50% complete lower Valley, opening south-central.

BOLL WEEVIL

NORTH CAROLINA: Boll weevil infestations continue high. The average infestation in 14 fields examined in 3 western counties of Rutherford, Cleveland, and Gaston was 84% punctured squares. In Cleveland County, the leading cotton county of the State, where little or no boll weevil damage ordinarily occurs, an average of 78% of the squares was punctured in the 5 fields examined.

SOUTH CAROLINA: Spotted rains and cloudy weather occurred in most sections of the State. The extremely dry areas received some rain, but it came too late to benefit the cotton crop. Cotton is opening prematurely in many fields and boll rot is now occurring in rank growth cotton as a result of rain and cloudy weather. Boll weevils are migrating in large numbers. Near the Pee Dee Experiment Station 53 weevils were collected from a flight screen trap as compared with 50 last week and 14 two weeks ago. The average square infestation in 95 fields in 19 counties was 84% in unpoisoned fields as compared with 30% in poisoned fields. Infestations are now high in all of the northern Piedmont counties.

L. M. Sparks, Jr., Extension Specialist, reported August 8: "The cotton crop in the Piedmont is short to date and very few blooms have been noticed. The absence of blooms indicates that the weevils are in abundance and are not being poisoned properly. All farmers in areas where the weevils are migrating are urged to protect all young bolls until they are too large for the weevil to injure."

GEORGIA: Weather conditions were variable but more favorable for poisoning operations than the previous week. Cotton has reached maturity in most fields in the southern half of the Coastal Plain, and some cotton picking is in progress. Weevils are very abundant and are moving into all fields. Damage is now confined to bolls. Most of the top crop and some of the middle crop have been damaged in poisoned fields. Unpoisoned fields show severe boll damage even on well grown bottom bolls. The cotton crop in general is late in the Piedmont area, and unless it is protected from weevils by the use of insecticides or dry, hot weather, serious losses will occur. Weevil infestation was found in 224 of the 226 fields examined in 84 counties. The infestation ranged from 1 to 10% in 36 fields, from 11 to 25% in 68 fields, from 26 to 50% in 46 fields, and in 74 fields more than 50% of the squares were punctured.

ALABAMA: Cotton is maturing and very few squares are present in south and southeastern counties. Some cotton picking is now in progress. Boll weevils are very numerous. Weevil infestation was found in all of the 56 fields examined in 11 counties at an average rate of 81% punctured squares. The infestation ranged from 12 to 25% in 5 fields, from 26 to 50% in 5 fields, and in 46 fields more than 50% of the squares were punctured.

F. S. Arant, Entomologist, Auburn, wrote on August 5: "Almost daily rainfall plus the shortage of insecticides has made it most difficult for the farmers to do a satisfactory job of controlling insects. I am afraid some farmers who were considering the new insecticides as miracles are going to be somewhat disappointed at the end of the year."

TENNESSEE: Boll weevils were found in 38 of the 40 fields examined in 8 counties in southwestern Tennessee. The two fields in which weevils were not found are in Haywood County. The highest infestation reported in that county was 9% punctured squares. In Tipton County the infestations are also light and the highest reported was 18% punctured squares. In Hardeman County the infestations ranged between 62 and 84% punctured squares. In Chester County 4 of the 5 fields examined had more than 70% punctured squares. Hundreds of bales of cotton can now be saved by the proper use of insecticides for boll weevil control in Chester, Fayette, Hardeman, Madison, McNairy, and Shelby Counties.

MISSISSIPPI: Clay Lyle, Entomologist, reported on August 8: "Boll weevil migration is now in progress nearly all over Mississippi, according to reports reaching this office. Migration began at State College August 3 and was reported as far north as Tupelo and Clarksdale about the same time or a day later. Weevils are so numerous in most sections that infestation counts are of little value, especially in the hill counties. The chief benefit from poisoning after this date is in protecting the young bolls, which are susceptible to weevil injury for about 18 to 20 days after blooming. With such a large population of weevils it will be extremely difficult and expensive to carry squares through to mature bolls. Even with the best of poisons applied at 4-day intervals the influx of weevils will be so great that heavy damage will be done before they can be killed."

E. W. Dunnam, Entomologist, reported on August 5: "General migration is in progress in the lower half of the Delta. The population is exceedingly heavy. Cotton fields in which no weevils or punctured squares were found are in the central or upper half of the Delta. The rate of percentage increase of punctured squares has been about 10% per week. However, the increase this week over last week did not exceed the average and the result of general migration was not reflected in the percentage of squares punctured."

The average infestation in 167 of the 176 fields examined in 16 Delta counties was 60% punctured squares. In 23 fields the infestation ranged from 1 to 10%, in 37 fields from 11 to 25%, in 23 fields from 26 to 50%, and in 84 fields more than 50% of the squares were punctured. The Delta and Pine Land Company in Bolivar County reports that weevil infestation was found in 308 of the 313 fields examined. The infestation ranged from 1 to 10% in 172 fields, from 11 to 25% in 74 fields, and more than 50% in 21 fields. B. J. Young, Production Manager, states: "These figures are somewhat misleading as they were taken mostly in the fields that seldom require poisoning."

As an indication of how serious the boll weevil situation is in Mississippi at the present time, we are quoting from a letter written by Clay Lyle on August 8: "We are discontinuing weevil counts for this season as we think it is time wasted. The older cotton is already heavily infested and will probably make no more, and the young cotton is subject to such a heavy attack that we doubt that much cotton will be produced even with frequent poisoning. This has certainly been the most disastrous season from an insect standpoint we have had since I became head of the Department of Zoology and Entomology (1931)."

LOUISIANA: During the week conditions have been somewhat more favorable for effective poison control of boll weevils than during the several preceding weeks. Many of the infestation counts were made in fields which had been treated with some poison. In view of the favorable conditions for weevil development and unfavorable conditions for effective poisoning, infestations have been held to surprisingly low levels. The average infestation in 607 fields in 12 parishes was 34% punctured squares as compared with 32% on this date in 1948, 15% in 1947, 68% in 1946, 54% in 1945, 21% in 1944, and 31% in 1943. Punctured squares were found in 605 of the 607 fields examined. The infestation ranged from 1 to 10% in 85 fields, from 11 to 25% in 183 fields, from 26 to 50% in 195 fields, and over 50% in 142 fields.

ARKANSAS: Conditions continued favorable for boll weevil development. Most of the fields examined in southwestern and southeastern counties have been poisoned for weevil control. In the east central portion, an unusually large number of fields have been poisoned, however, poisoning is by no means general. The average weevil infestation in 45 fields in 6 southeastern counties was 50% punctured squares as compared with 51% last week and 43% two weeks ago. An average of 23% of the squares were punctured on this date in 1948, 22% in 1947, 37% in 1946, 23% in 1945, 3% in

1944, and 12% in 1943. Punctured squares were found in 44 of the 45 fields examined. The infestation ranged from 1 to 10% in 2 fields, from 11 to 25% in 11 fields, from 26 to 50% in 8 fields, and over 50% in 23 fields.

The average boll weevil infestation in 247 fields in 3 southwestern counties was 25% as compared with 23% last week and 22% two weeks ago. The infestation ranged from 1 to 10% in 30 fields, from 11 to 25% in 60 fields, from 26 to 50% in 99 fields, and over 50% in 57 fields.

The average infestation in 107 fields in 10 east central counties was 20% punctured squares. Of the 107 fields examined 82 were infested. The infestation ranged from 1 to 10% in 33 fields, 11 to 25% in 23 fields, from 26 to 50% in 9 fields, and over 50% in 17 fields.

TEXAS: On August 8, K. P. Ewing, Waco, reported: "Boll weevils are extremely numerous in some fields in central and northern areas. There has been a general migration of weevils from heavily infested fields as far north as Oklahoma. The average boll weevil infestation in 515 fields in 37 counties was 26% punctured squares, which compares with 15% last week and 22% at this date last year. Many growers need to use control measures to protect late squares or immature bolls from weevil damage. This protection is especially needed in some fields of late-planted cotton or cotton planted on extra rich lands where late fruiting is still taking place."

OKLAHOMA: Local rains and cool nights were favorable for weevil development. Boll weevils are now migrating in eastern counties, and all fields of early-planted cotton in this section of the State are infested with weevils. Infestation in many fields is above 50% and is increasing rapidly in late cotton. All of the 46 fields examined in eastern counties were infested, some ranging as high as 97%. Of the 61 fields examined in central and western counties 45 were infested. Normally, the infestation is light in these counties. The average infestation in 119 fields in 18 counties was 34% as compared with 33% last week.

BOLLWORM

TEXAS: K. P. Ewing, Waco, reported on August 8: "Bollworms continue to do heavy damage in spots but on the whole infestations have decreased in nearly all areas. The heaviest and most widespread infestations at present are in the Brazos River bottoms in Robertson and Brazos counties and in the Pecos Valley of Texas."

On July 21, L. F. Greer collected a large number of bollworms from cotton from Wharton County. His determination of these insects as Heliothis armigera (Hbn.) was verified by H. W. Capps.

B. L. Owen submitted specimens of the bollworm, Heliothis armigera (Hbn.), collected from cotton in Dawson County on June 27, from Lubbock County on July 5, and from Floyd County on June 29.

OKLAHOMA: Bollworm eggs were found in large numbers in many fields and larvae in all stages of development were noted. Some fields are in urgent need of poison.

ARKANSAS: Bollworms are present in many fields in the southwestern part of the State

LOUISIANA: L. D. Newsom reported on August 2: "The bollworm infestation has decreased in intensity during the past week. I fear, however, that we are faced with even heavier infestations within the next week. Egg deposition is showing a gradual rise.

ALABAMA: Bollworms and tobacco budworms were noted in 14 of the 56 fields examined in 11 south and southeastern counties. The heaviest infestations were in Houston and Geneva Counties. In 1 field in Houston County 9% of the squares were damaged. In Geneva County larvae were present in most fields. The square infestation ranged up to 15%. In the other 9 counties examined the square infestation was 2% or less.

C. M. Jones collected "bollworms" in Monroe County, July 19. Two specimens were determined as the bollworm, Heliothis armigera (Hbn.), and one as the tobacco budworm Heliothis virescens (F.). On July 21 he also collected H. virescens on cotton in Covington County. (Det. by H. W. Capps)

COTTON LEAFWORM

TEXAS: Cotton leafworms were noted in several additional fields in Refugio County during the week and also in Matagorda and Victoria Counties. No fields have been found with sufficient infestation to need control.

COTTON FLEAHOPPER, TARNISHED PLANT BUG, RAPID PLANT BUG, AND OTHER MIRIDS

ALABAMA: C. M. Jones made sweepings from cotton plants in Wilcox County on July 8 and collected four species of Miridae that were determined by R. I. Sailer as: rapid plant bug, Adelphocoris rapidus Say; cotton fleahopper Psallus seriatus (Reuter); Neurocolpus nubilus. Rapid plant bugs were noted in 6 of 56 fields examined in 11 south and southeastern counties.

MISSISSIPPI: In the examination of 176 fields in 16 Delta Counties, Neurocolpus nubilus was observed in 8 fields, tarnished plant bugs in 2 fields, and cotton fleahoppers in 2 fields.

TENNESSEE: In the examination of 40 cotton fields in 8 counties in southwestern Tennessee, tarnished plant bug was reported in 1 field and rapid plant bug in 6 fields.

OKLAHOMA: Cotton fleahopper infestation remains low. The average infestation in 119 fields in 18 counties was 2.9 fleahoppers per 100 terminals.

TEXAS: On August 8, K. P. Ewing, Waco, wrote: "Fleahoppers are below the damage point in practically all fields, with a sharp decrease in the Plains area."

MISCELLANEOUS INSECTS

ALABAMA: C. M. Jones, Auburn, collected lepidopterous larvae on cotton as follows: Platynota sp. in Wilcox County, July 19; Prodenia sp. in Escambia County, July 20; and the fall armyworm, Laphygma frugiperda (A. & S.), in Conecuh County, July 20. (det. by H. W. Capps) Light infestations of cotton aphids were observed in 20 of the 56 fields examined in 11 south and southeastern counties, and red spiders were observed in 7 fields.

ARKANSAS: R. C. Gaines reported the stalk borer, Papaipema nebris (Guen.), from cotton stems at Little Rock on July 22. (det. by H. W. Capps)

LOUISIANA: G. L. Smith and R. C. Gaines collected 21 lepidopterous larvae on cotton in Madison Parish, on July 22. These included 16 specimens of the tobacco budworm, Heliothis virescens (F.), and 3 specimens of the bollworm, Heliothis armigera (Hbn.), and 1 cabbage looper, Trichoplusia ni (Hbn.) of the family Phalaenidae, and 1 specimen of Platynota rostrana (Wlk.) of the family Tortricidae.

MISSOURI: On August 5, George D. Jones, Extension Entomologist, Columbia, wrote that aphids, red spiders, cotton fleahoppers, and other pests had not become serious in the cotton fields this season. Grasshoppers are not a serious problem to the cotton growers but some have found it necessary to use toxaphene or chlordane around the margins of the cotton fields because the grasshoppers were abundant along the ditch banks and fence rows.

MISSISSIPPI: B. J. Young, Delta and Pine Land Company, Bolivar County, reported on August 5: "Aphids are very bad in some unpoisoned fields. Unfavorable weather and the scarcity of poison are causing difficulty in obtaining control, but in a year like this complete control cannot be expected."

TEXAS: On May 10 K. P. Ewing collected hairy caterpillars on cotton in McLennan County that proved to be the salt-marsh caterpillar, Estigmene acrea, (Drury). On May 11 he collected cutworms in Falls County that were determined as the variegated cutworm, Peridroma margaritosa (Haw.); the yellow-striped armyworm, Prodenia ornithogalli Guen., and another cutworm, Feltia sp. He made collections of aphids on cotton in Falls and McLennan Counties, Texas, on May 10, 11, and 12 and found 3 species on cotton: the potato aphid, Macrosiphum solenifolii (Ashm.); the cowpea aphid, Aphis medicaginis Kech., and the cotton aphid, Aphis gossypii Glov. He collected hairy caterpillars feeding on cotton in McLennan County on May 16 that were later identified as the yellow woollybear, Diacrisia virginica (F.), of the family Arctiidae, an occasional pest of cotton.

INSECTS ON IRRIGATED COTTON OF THE SOUTHWEST

ARIZONA: Stink bug populations increased in some fields in the Salt River Valley, but Lygus spp. populations remain low. There was an increase in populations in some fields adjacent to freshly cut alfalfa. In the Santa Cruz Valley and Pinal County injurious cotton insect populations continue low. A large percent of the cotton acreage has been poisoned for insect control in these areas. On August 6, J. N. Roney, Extension Entomologist, reported: "Bollworms are causing considerable damage to many cotton fields in Pinal, Cochise, and Graham Counties."

NEW MEXICO: The injurious Hemiptera populations in the Pecos Valley remain very low in all poisoned fields and with few exceptions the populations are also very low in fields that have not been dusted. Bollworms are fairly general and numerous enough in a number of fields to warrant control measures.

TEXAS: Bollworms are serious in the El Paso Valley and a considerable amount of poison is being applied to check them. Stink bugs were taken in 69 of the 158 cotton fields swept. The number of stink bugs ranged from 1 to 7, with an average of 1.7 per 100 sweeps. Thyanta custator was slightly more abundant than Chlorochroa sayi and C. ligata. No injurious Hemiptera were collected in 38 of the 158 fields swept. The populations ranged from 1 to 5 per 100 sweeps in 108 fields, from 6 to 10 in 9 fields, and from 11 to 15 in 2 fields. The average for the 158 fields swept was 2.2 Hemiptera per 100 sweeps.

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